

DRAINAGE COVER

TECHNICAL FIELD

The present application relates to the field of municipal administration, and more particularly to a drainage cover.

BACKGROUND

Existing drainage channels covers on the road are mostly bores and slits types, and drainage outlets of the drainage manhole covers allow rains on the road to flow into sewers. However, when the rainwater flows into the sewers, small leaves, tree droppings, shrubs, grass trimmings and cigarette butts will also enter the sewers through the drainage outlets. In this case, it is possible for the drainage outlets of the drainage cover or the sewers to be clogged, which brings about maintenance tasks on municipal administration. Meanwhile, due to the existence of the drainage outlets, the sewers and the roads are communicated with each other. Thus, mice, mosquitoes and flies, and cockroaches will be freely active between the roads and the sewers, which will bring about public hygiene problems.

SUMMARY

As drainage outlets of a drainage channel cover on roads in the prior art fail to prevent small objects from entering into sewers, and also cause problems such as mice, mosquitoes, flies, rodent and cockroaches, the object of the present application is to provide a drainage cover.

The technical solution of the application is as follows:

In one aspect, a drainage cover is provided in the present application, which comprises a slab body formed by stacking up multi-layers of stones. Wherein gaps are formed among the stones of the slab body, and the stones adjacent to each

other are adhered together at contact portions of the stones. Drainage channels of the slab body are formed by the gaps among the stones of the slab body, and a drainage groove is defined on the bottom of the slab body.

In above drainage cover of the present application, the drainage groove is a rectangle groove having a cross-section in shape of a trapezoid.

In above drainage cover of the present application, the drainage groove is a groove in shape of a hemisphere.

In above drainage cover of the present application, the drainage cover further includes a frame; wherein the frame includes a frame body, and the frame body includes a plurality of connecting plates which are sequentially connected end-to-end. An accommodating space is formed in the middle of the frame body. The frame further includes a slot-type bracket arranged in the accommodating space of the frame body. A plurality of drainage holes are defined on the slot-type bracket. Both ends of the slot-type bracket are arranged on two connecting plates of the frame body respectively. The slab body is formed by stacking up the multi-layers of stones contained in the accommodating space of the frame body, and the slab body is supported on the slot-type bracket. The drainage groove on the bottom of the slab body is formed by the slot-type bracket.

In above drainage cover of the present application, the frame further includes a reinforcing plate arranged in the accommodating space of the frame body, both ends of the reinforcing plate are arranged on the two connecting plates of the frame body respectively.

In above drainage cover of the present application, the frame body is in shape of a rectangle, and both ends of the reinforcing plate are respectively arranged on two connecting plates of the frame body that are opposite to each other.

In above drainage cover of the present application, wherein the frame body is in shape of a rectangle, and the reinforcing plate are arranged on two connecting

plates of the frame body that are adjacent to each other.

In another aspect, another drainage cover is further provided in the present application, which comprises a frame. Wherein, the frame includes a frame body. The frame body includes a plurality of connecting plates, which are sequentially connected end-to-end. An accommodating space is formed in the middle of the frame body. The frame further includes a slot-type bracket arranged in the accommodating space of the frame body. A plurality of drainage holes are defined on the slot-type bracket. Both ends of the slot-type bracket are arranged on two connecting plates of the frame body respectively. The slab body is formed by stacking up the multi-layers of stones contained in the accommodating space of the frame body. Gaps are formed among the stones of the slab body, and the stones adjacent to each other are adhered together at contact portions of the stones. Drainage channels of the slab body are formed by the gaps among the stones of the slab body. The slab body is supported on the slot-type bracket, and the drainage groove on the bottom of the slab body is formed by the slot-type bracket. The slot-type bracket is a rectangle groove body having a cross-section in shape of a trapezoid.

In this application, the drainage channels of the slab body prevent small objects from entering into the sewers, and also prevent mice, mosquitoes, rodent, flies and cockroaches from being active between the roads and the sewers. Meanwhile, a drainage groove is defined on the bottom of the slab body in the present application, such that rains are capable of passing through the slab body rapidly. In addition, a frame is coupled to the slab body in the present application, such that the drainage cover has a certain bearing ability. In conclusion, the drainage cover in the present application has an ideal effect for screening, draining and is elegant in appearance.

BRIEF DESCRIPTION OF THE DRAWINGS

The present application will be further described with reference to the accompanying drawings and embodiments in the following, in the accompanying drawings:

Fig. 1 illustrates a structure of a drainage cover in accordance with a first embodiment of the present application; and

Fig. 2 illustrates a structure of a frame in accordance with a second embodiment of the present application.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

To make the technical solution disclosed in the present application more clearly understood and implemented by one skilled in the art, the present application is further described with reference to the accompanying drawings and embodiments in the following.

A technical idea of the present application is as follow: Multi-layers of stones are stacked up to form a drainage cover; gaps among stones in the drainage cover are used as channels through which rains flow into sewers. As the gaps among the stones are small, small leaves, tree droppings, shrubs, grass trimmings, cigarette butts, mice, mosquitoes and flies, and cockroaches and the like will not pass through the drainage cover. Thus, only rains will flow into the sewers, and thus the sewers will not be clogged. Meanwhile, small animals, such as mice, mosquitoes and flies, and cockroaches, are unable to be active between the roads and the sewers. Therefore, public hygiene problems caused by the small animals can be avoided.

According to the above technical idea, a drainage cover is provided in the present application. The drainage cover includes a slab body which is formed by stacking up multi-layers of stones. Gaps are formed among the stones of the slab

body. Stones adjacent to each other are adhered together at the contact portion of the stones. In this case, the gaps among the stones of the slab body form the drainage channels of the slab body. A drainage groove is further defined on the bottom of the slab body.

Two embodiments are provided to describe the technical solution of the present application in detail in the following.

The first embodiment

Referring to Fig.1, which illustrates a structure of a drainage cover in a first embodiment of the present application, the drainage cover comprises a slab body 1 formed by stacking up multi-layers of stones. In this case, stones can be pebbles, detritus, sand or other stones. The stones in this case are not in regularly prismatic shapes, and are stacked up naturally, thus gaps are formed among the stones. The stones adjacent to each other are adhered together at contact portion of the stones. The drainage channels of the slab body 1 are formed by the gaps among the stones of the slab body 1.

Furthermore, in this embodiment, the slab body 1 is formed by the stones adhered to each other through binders. The binders in this case are epoxy resin binders or unsaturated polyester resin binders and the like. The epoxy resin binders or unsaturated polyester resin binders in this case are common binders for man-made stones. With the two binders, the stones can be tightly bonded with each other. In general, forming of the slab body 1 includes the following steps.

1) Mix the stones and the binders according to a certain proportion. In this case, the proportion of the stones and the binders is related to the granularity of the stones, and the concentration and viscosity of the binders.

2) Pour the mixed stones and binders into a cavity of a mould; and stand the stones and the binders poured into the cavity for a time, in such a way that the binders are possible to cure fast. After the binders have cured, the slab body 1 with

drainage channels is formed by the stones and the binders.

Furthermore, in this embodiment, a drainage groove 11 is defined on the bottom of the slab body 1. Herein the drainage groove 11 is configured to broaden a superficial area of the bottom of the slab body 1. As the superficial area of the bottom of the slab body 1 is larger than that of the top of the slab body 1, rains dripped on the top of the slab body 1 can pass through the slab body 1 rapidly, and further enter into the sewers below the slab body 1. In this case, drainage of the slab body 1 is just like a stream of people entering a pedestrian path. When there is only one exit for the pedestrian path, the speed of the stream of people will be very slow. However, when there are plurality of exits for the pedestrian path, the stream of people will move fast.

In this embodiment, the drainage groove 11 is a rectangle groove having a cross-section in shape of a trapezoid. It can be understood that, in order to increase the superficial area of the bottom of the slab body 1, the drainage groove 11 may be a groove in shape of a hemisphere. Certainly, the shape of the drainage groove 11 is not limit to the two shapes above; it can also be other shapes.

The drainage cover in the first embodiment only includes the slab body 1, and the stones of the slab body 1 are connected to each other only with the binders. Thus, the drainage cover in the first embodiment can't bear too much weight. Therefore, the drainage cover is only possible to be used for places where people are ban from accessing, such as landscape grass and landscape shrub, and the drainage cover only plays a part in allowing the rain to drain fast.

The second embodiment

Compared with the drainage cover in the first embodiment, the drainage cover in the second embodiment further includes a frame 2. The slab body 1 is formed in the frame 2, and the slab body 1 is coupled tightly to the frame 2 without a mould. In this way, the complexity for molding the drainage cover is reduced. Meanwhile,

as it is coupled tightly to the frame 2, the slab body 1 has a certain bearing ability.

In detailed, referring to Fig.2, which illustrates a structure of a frame 2 in the second embodiment of the present application, the frame 2 includes a frame body 21. In this embodiment, the frame body 21 includes a plurality of connecting plates 211 which are sequentially connected end-to-end. Since the connecting plates 211 are of a certain height, an accommodating space is formed in the middle of the frame body 21. Furthermore, the frame 2 also includes a slot-type bracket 22 arranged in the accommodating space of the frame body 21. A plurality of drainage holes 221 are defined on the slot-type bracket 22. Further, in this embodiment, both ends of the slot-type bracket 22 are arranged onto two connecting plates 211 of the frame body 21 respectively. Preferably, in this embodiment, the frame body 21 is in shape of a rectangle. Both ends of the slot-type bracket 22 are respectively arranged onto two connecting plates 211 of the frame body 21 that are opposite to each other. Certainly, it can be understood that, it is possible for the slot-type bracket 22 to be arranged onto two connecting plates 211 of the frame body 21 that are adjacent to each other. In this embodiment, the slot-type bracket 22 is a rectangle groove body having a cross-section in shape of a trapezoid.

Further, in this embodiment, the drainage cover also includes multi-layers of stones contained in the accommodating space of the frame body 21. The slab body 1 is formed by stacking up the multi-layers of stones. In this case, stones can be pebbles, detritus, sand or other stones. The stones are not in regularly prismatic shapes, and are stacked up naturally, thus gaps are formed among the stones. Stones adjacent to each other are adhered together at contact portion of the stones. The drainage channels of the slab body 1 are formed by the gaps among the stones of the slab body 1.

Furthermore, in this embodiment, the slab body 1 is formed by the stones

adhered to each other through binders. The binders in this case are epoxy resin binders or unsaturated polyester resin binders and the like. The epoxy resin binders or unsaturated polyester resin binders in this case are common binders for man-made stones. With the two binders, the stones can be tightly bonded with each other. In general, forming of the slab body 1 includes the following steps.

1) Mix the stones and the binders according to a certain proportion. In this case, the proportion of the stones and the binders is related to the granularity of the stones, and the concentration and viscosity of the binders.

2) Pour the mixed stones and binders into the accommodating space of the frame body 21.

3) Stand the stones and the binders poured in the accommodating space of the frame body 21 for a time, in such a way that the binders are possible to cure fast. After the binders have cured, the slab body 1 with drainage channels is formed by the stones and the binders. And the slab body 1 is coupled tightly to the frame 2.

Further, in this embodiment, the slab body 1 is supported on the slot-type bracket 22. Thus, the drainage groove 11 on the bottom of the slab body 1 is formed by the slot-type bracket 22. Herein the drainage groove 11 is configured to broaden a superficial area of the bottom of the slab body 1. As the superficial area of the bottom of the slab body 1 is larger than that of the top of the slab body 1, rains dripped on the top of the slab body 1 can pass through the slab body 1 rapidly, and further enter into the sewers below the slab body 1. In this case, drainage of the slab body 1 is just like a stream of people entering a pedestrian path. When there is only one exit for the pedestrian path, the speed of the stream of people will be very slow. However, when there are plurality of exits for the pedestrian path, the stream of people will move fast.

In this way, due to existence of the frame 2, when loads are loaded on the slab body 1, the loads can be transferred to the frame 2. Therefore, the drainage cover

in the second embodiment can bear more loads, and thus the drainage cover can be used for pedestrian paths or roads for motor vehicles.

Further, in order to enhance the coupling between the slab body 1 and the frame 2, in this embodiment, the frame 2 further includes a reinforcing plate 213 arranged in the accommodating space of the frame body 21. Both ends of the reinforcing plate 213 are arranged on the two connecting plates 211 of the frame body 21 respectively. Preferably, in this embodiment, both ends of the reinforcing plate 213 are respectively arranged on the two connecting plates 211 of the frame body 21 that are opposite to each other. It can be understood that, it is possible for both ends of the reinforcing plate 213 to be arranged on two connecting plates 211 of the frame body 21 that are adjacent to each other.

In this embodiment, the frame 2 is made from stainless steel. However, it can be understood, the frame 2 is not limit to be made from stainless steel; it is possible for the frame 2 to be made from cast iron, aluminum or other steels.

In this application, the drainage channels of the slab body prevent small objects from entering into the sewers, and also prevent mice, mosquitoes and flies, and cockroaches from being active between the roads and the sewers. Meanwhile, a drainage groove is defined on the bottom of the slab body in the present application, such that rains are capable of passing through the slab body rapidly. In addition, a frame is coupled to the slab body in the present application, such that the drainage cover has a certain bearing ability. In conclusion, the drainage cover in the present application has an ideal effect for screening, draining and is elegant in appearance.

It should be understood that, one skilled in the art can make any improvements or modifications, and these improvements and modifications should be included within the scope of the present application.

CLAIMS

1. A drainage cover, comprising a slab body formed by stacking up multi-layers of stones; wherein gaps are formed among the stones of the slab body, and the stones adjacent to each other are adhered together at contact portions of the stones, drainage channels of the slab body are formed by the gaps among the stones of the slab body, and a drainage groove is defined on the bottom of the slab body.

2. The drainage cover according to claim 1, wherein the drainage groove is a rectangle groove having a cross-section in shape of a trapezoid.

3. The drainage cover according to claim 1, wherein the drainage groove is a groove in shape of a hemisphere.

4. The drainage cover according to claim 1, wherein the drainage cover further includes a frame; wherein the frame includes a frame body, and the frame body includes a plurality of connecting plates which are sequentially connected end-to-end; an accommodating space is formed in the middle of the frame body; the frame further includes a slot-type bracket arranged in the accommodating space of the frame body; a plurality of drainage holes are defined on the slot-type bracket; both ends of the slot-type bracket are arranged on two connecting plates of the frame body respectively; the slab body is formed by stacking up the multi-layers of stones contained in the accommodating space of the frame body, and the slab body is supported on the slot-type bracket; the drainage groove on the bottom of the slab body is formed by the slot-type bracket.

5. The drainage cover according to claim 4, wherein the frame further includes a reinforcing plate arranged in the accommodating space of the frame

body, both ends of the reinforcing plate are arranged on the two connecting plates of the frame body, respectively.

6. The drainage cover according to claim 5, wherein the frame body is in shape of a rectangle, and both ends of the reinforcing plate are respectively arranged on two connecting plates of the frame body that are opposite to each other.

7. The drainage cover according to claim 5, wherein the frame body is in shape of a rectangle, and the reinforcing plate are arranged on two connecting plates of the frame body that are adjacent to each other.

8. A drainage cover, comprising a frame; wherein the frame includes a frame body; the frame body includes a plurality of connecting plates, which are sequentially connected end-to-end; an accommodating space is formed in the middle of the frame body; the frame further includes a slot-type bracket arranged in the accommodating space of the frame body; a plurality of drainage holes are defined on the slot-type bracket; both ends of the slot-type bracket are arranged on two connecting plates of the frame body respectively; a slab body is formed by stacking up multi-layers of stones contained in the accommodating space of the frame body; gaps are formed among the stones of the slab body, and the stones adjacent to each other are adhered together at contact portions of the stones, drainage channels of the slab body are formed by the gaps among the stones of the slab body; the slab body is supported on the slot-type bracket, and a drainage groove on the bottom of the slab body is formed by the slot-type bracket; the slot-type bracket is a rectangle groove body having a cross-section in shape of a trapezoid.